

REMARKS/ARGUMENTS

Favorable reconsideration of this Application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-3 and 5-15 are pending; Claim 5 is amended; Claims 13-15 are added; and no claims are canceled herewith. It is respectfully submitted that no new matter is added by this amendment.

In the outstanding Office Action, Claims 3, 5, 8, and 9 were rejected for obviousness-type double patenting over copending application 10/330,092; Claim 10 was rejected for nonstatutory obviousness-type double patenting over copending application 10/706,915; Claims 5-8 and 11-12 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,186,331 to Kinapara et al.; Claims 1-3 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent Publication 2002/0064439 to Otaguro in view of U.S. Patent No. 6,473,993 to Tokunaga; Claim 9 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kinapara in view of U.S. Patent No. 6,682,629 to Kudo; and Claim 10 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kinapara and further in view of U.S. Patent No. 6,473,993 to Tokunaga.

With regard to the rejection of the claims for double patenting, Applicants will determine whether to file a Terminal Disclaimer at a later time in the prosecution of this application.

The applied art does not teach or suggest a wafer processing apparatus including, in part, a first opening portion and a door that closes the first opening portion when the transfer of the wafer is not performed and that opens that portion when the transfer of the wafer is performed, with a gas flow path from the chamber to the exterior of the mini-environment portion located around the first opening portion and formed such that a flow rate of gas flowing from the chamber to the exterior of the mini-environment portion when the wafer

transferring operation is not performed becomes substantially equal to a flow rate of gas flowing out from a space formed from the chamber and the clean box when the wafer transferring operation is performed, as claimed in Claim 1 and similarly claimed in Claim 5.

Additionally, the applied art does not teach, disclose or suggest one or more gas flow paths are formed at least at a vicinity of four edges of the door, as claimed in new Claim 13. Support for the features recited in new claims 13-15 can be found at least at pages 11, line 19-page 12, line 3 and page 14, lines 18-24 of the present specification.

Instead, Otaguro discloses a guide slit 52 in which the arm member 62 moves horizontally and vertically along. Accordingly, if any gas flows through the slit 52, it is not the gas flow of exemplary embodiments of the present invention. That is, there is no gas flow path located around the first opening portion or at an inside area of the door in Otaguro. As recited in the independent claims, a gas path is located around a first opening portion and thus, the gas passes through a clearance between the door and the opening portion of the mini-environment.

Additionally, Otaguro discloses a clearance between the FOUP 10 and the port plate 21 is made as small as possible in order to prevent dust from being mixed into the inner gas of the FOUP 10, to prevent dust from attaching to the door 13, and to prevent clean air from flowing outwardly. That is, there is no gas flow path around the opening of the FOUP 10, as easily understood from FIGS. 1 and 2 of Otaguro.

In contrast, according to exemplary embodiments of the present invention, the gas flow path is positively formed by using the opening and clearance so as to form a gas flow path around the opening from a space formed by the chamber and the inner space of clean box to the exterior thereof, so that the flow rate of gas flowing along the gas flow path is made substantially constant irrespective of the opening or closing state of the door, thus preventing or minimizing dust from being mixed into the gas in the clean box.

Tokunaga, is not relied upon to provide the features identified as deficient Otaguro, therefore Tokunaga is not substantively addressed herewith.

As disclosed in the Specification, conventional semiconductor devices for the processing of wafers are kept in a highly clean condition by maintaining the pressure within the mini environmental portion higher than an external ambient pressure. As such, when a door of the mini-environment is opened for transferring of the wafer, an airflow with a variable flow rate and a significant turbulence level is created, causing dust to be transported into the mini-environment, thus contaminating the wafer being processed. However, according to exemplary embodiments of the invention, the flow path is such that a flow rate of a gas flow from the inside of the mini-environment to the outside when the door is closed is substantially equal to the flow rate of the gas when the door is opened. As such, the above-described flow with a high level of turbulence is significantly reduced or eliminated. The applied art does not disclose the all the features recited in the independent claims and therefore, does not teach or disclose such an advantageous flow path.

Accordingly, Otaguro and Tokunaga, neither individually nor in any combination, render obvious the invention recited in Claim 1. It is respectfully submitted that the rejection of Claim 1 based on Otaguro and Tokunaga be withdrawn and Claim 1 allowed. Claims 2 and 3, depending from Claim 1, should be allowed for at least the reasons set forth above as well as for the additional features they recite.

Claim 5 recites a wafer processing apparatus, comprising, among other features, a first opening, a door configured to open and close the first opening, and a gas flow path formed between the door and the first opening when the door is closed such that a flow rate of a gas flowing through the gas flow path is substantially equal to a flow rate of the gas flowing from the pressurized chamber to the exterior of the mini-environment portion through the opening when the door is opened.

At least the above-discussed features are not taught or suggested in the applied art. Specifically, Kinapara discloses a gap 45 through which the gas can flow. However, as discussed with respect to Figs. 3 and 4 of Kinapara, the size of the areas acting as the gas flow path changes between cases of opening the door and closing the door. Specifically, the gap 45 formed on the above side of the door may be maintained at a constant but the gap formed on the below side of the door can not be constantly maintained. Hence, the gap of Kinapara is quite different from the gas flow path as recited in the claimed invention.

Accordingly, Kinapara does not anticipate all the features recited in Claim 5. Therefore, it is respectfully requested that the rejection of Claim 5 based on Kinapara be withdrawn and Claim 5 allowed. Claims 6-12 depend from Claim 5. Based at least on the above-noted remarks, Applicants respectfully submit that Claims 5-12 are patentable over the teachings of Kinapara.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-3 and 5-15 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representatives at the below listed telephone number.

Respectfully submitted,

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